

these interesting remains as they deserve. I have, however, dispatched the following specimens on their way to England:—eight small bas-reliefs of battles, lion hunts, &c. (very beautiful); two large winged Divinities (one with an eagle's head), the head of one of the great bulls, and a portion of a slab, with the head of a king, and his attendant eunuch. They are all fine specimens.

I have been about twenty days occupied in packing and forwarding these antiquities, and have had to move immense blocks—some nearly nine feet square and one foot thick—of the most fragile material, and covered with delicate sculpture, without even a rope capable of sustaining an ordinary weight, and without any machinery. Many of the blocks have been sawn in various directions, to reduce them to a transportable size, and have been removed to the river in carts which in England would scarcely be used for carrying a load of hay. I have luckily succeeded in sending them all without accident. I trust you will one day see them in the British Museum. The finer sculptures—the great lions and fine bas-reliefs—remain *in situ quo*; I had no means of removing them. As I advance further into the mound, the sculptures become more perfect in preservation, and superior in execution. The discoveries are creating great interest; and every post brings me letters from parties wanting information, and offering (scientific) assistance.

Major Hawlinson, the British resident at Baghdad, in a letter to Mr. Layard, says:—"I look upon the *Nimroud* marbles as invaluable. They unfold to us the history, theology, language, arts, manners, military skill, political relations, &c., of one of the most illustrious nations of antiquity, and thus fill up an enormous blank in our knowledge of the early history of the world. I consider the discovery of these sculptures as more valuable than even Pompeii or Herculaneum, and view every new inscription as equal to gaining one of the lost decades of Livy." "I hope," says Mr. Layard, "the people at home will take the same view of the subject."

At the conclusion of Mr. Layard's paper, Mr. Tite said he was most anxious to direct the attention of the Government to the discoveries made by Mr. Layard, and to obtain for him that aid which he deserved. We owed much in England to individual enterprise, and that, too, on the part of non-professional men: he would instance Belzoni and Fellows, who had done so much. Mr. Layard was of the same class; he was a solicitor, travelling for his health; but by his enterprise and good judgment he had succeeded in making what must be considered some great discoveries. The remains which had been described referred to two different periods. As to those from *Nimroud*, it did not seem quite clear from what part they came; all the buildings there, however, were ascribed to *Nimrod*. The history of that period was well and briefly narrated by Gibbon, from whom he (Mr. Tite) then read some passages, to shew the degree of civilization early attained by the inhabitants of Asia.

The speaker continued: he did not consider these remains so ancient as Mr. Layard, but attributed them to the period of Cyrus and Darius. The French had been intent on the elucidation of this same period of history, and were exploring neighbouring ground, but had not been so successful as Mr. Layard.

As to Al Hather, it was one of those extraordinary cities, of which the rise, progress, and destruction, were alike mysterious. It was well known, but had not been investigated, the difficulties of access being great. Dr. Ross, in the ninth volume of the *Transactions of the Geographical Society*, gave a plan of the city.

From this plan, it was seen that the walls surrounding the city formed a circle, this was divided into two by a wall across the diameter; one-half was appropriated to the living, the other half to the dead, being the necropolis. The description given by Buckingham of

another extraordinary city, Ctesiphon—probably agreed with Al Hather; and the account given by Gibbon of the sack of this city by Omar, might probably serve for an account of the destruction of Al Hather. He was most anxious that the exertions of Mr. Layard should be recognised by the Government, and that we should see the results of his labours in the British Museum.

The honorary secretary said, that he had learnt two days before, that the Government had already made an arrangement to reimburse Mr. Layard, that some of the marbles were on their way to this country, and that means had been provided for further investigation. We shall be truly glad to find it so, but at present are disposed to regard it as somewhat doubtful.

APPENDIX TO "ANNOTATIONS ON IRON."

ALLUSION having been made to the experiments of Messrs. Fairbairn and Hodgkinson on the strength of iron and the best form of girders (see p. 459), we think some additional particulars may be interesting. We also append extracts from answers to certain inquiries, made about the time the results of these experiments were published, from an individual who was well acquainted with their nature, and who had opportunities of witnessing their progress. The particulars of these experiments are to be found in the *Transactions of the British Association for the Advancement of Science*, and in those of the *Literary and Philosophical Society of Manchester*, vol. v. Mr. Fairbairn's researches were, we believe, directed mainly to the comparative strength of different descriptions of iron, and to the effects of the hot and cold blasts. Mr. Hodgkinson directed his attention rather to the capabilities of the material to resist the different forces of tension, cross strain, and compression, and to ascertaining the form and proportion, which should be given to the material under particular circumstances. Our correspondent wrote:—"All I think it necessary to say with reference to these experiments is, that you must avoid making any reference to particular makes of iron, for it unfortunately happens that the results here shown are not borne out in general practice. The fact was, that the use to which these samples were intended to be applied became so well known, that many parties, making very inferior iron generally, sent us samples of very first-rate strength and toughness." And in reference to the hot and cold blast iron, which are compared in our former article with decided disadvantage to the former, we find that we were advised as follows:—"Experience proves, as a general rule, that cold blast iron is stronger than hot; but this arises from the fact that the hot blast enables the maker to use an inferior material, which was formerly left on the bank, and was a dead loss; and very few are honest enough, or have sufficient resolution, to withstand the temptation. If the same materials be worked, the hot-air iron has a trifle the preference. The prejudice against the hot air is perfectly ridiculous, if the maker will but put proper materials into the furnace. Some stones and coal, however, will not bear the hot blast. Yorkshire iron, for instance, is greatly injured by it." On the form of section, and the effect of time in producing deflection of iron beams, the points which Mr. Hodgkinson investigated, he said:—"Time produces so little deflection in iron, provided it be only fairly weighted, as not to be at all worth notice."—"Dr. Young started a theory, upon which Tredgold, Bramah, and several foreign engineers made some very interesting experiments. They were very satisfactory as far as they went, but they ought to have tried greater weights, and then their whole theory would have proved itself futile. The beam, which Tredgold called the best, in his experiments, would have broken with a very trifling addition of weight; but he did not know that, because he did not try it. The result from Tredgold's reasoning is, that the elasticity of cast-iron remains perfect, when a bar is not loaded with more than about 15,000 pounds per square inch, and this he calculates

to be about one-third of the breaking weight; but in the late experiments at Mr. Fairbairn's, many bars of cast-iron were broken with a weight actually less than what Tredgold called his strongest point. In Mr. Hodgkinson's report to the British Association, I think it is shewn clearly that there is no 'elastic point' in iron."—"Tredgold, Dufau, and others make it out, that a beam of any form will bear the same weight, which ever way it is turned upwards; the absurdity of which will be shewn by a simple example. A bar of cast-iron of the Σ section will carry three or four times as much weight, set in that manner, as it will when set thus Σ . All Tredgold's reasoning goes on the supposition, that the tensile and compressive strengths of iron are the same, which is, in fact, begging the whole question. Unless we have been most strangely and unaccountably deceived, in every one of our experiments, as to the breaking point, we have invariably found, that it takes six times as much pressure to crush cast-iron as to tear it asunder, and I therefore prefer that form of beam which has the lower edge the strongest, where the greatest pressure will always take place." Notwithstanding the result of the experiments above-mentioned, we know that the Σ form of section is still persevered in by many; and it is much to be regretted that complete unanimity should not prevail in this very important matter. It is desirable that attention should still be directed to the subject, until it is completely set at rest by indisputable experiment. In many great works, iron is the most important material of any employed; and our pages have heretofore recorded instances of most disastrous failures. The writer above-quoted from, after saying that he has paid much attention to the question, concludes by saying, "I cannot help thinking that Tredgold, and others who think with him, have in the first instance been struck with the beauty of Dr. Young's theory, and have made all their experiments more with a view of supporting than of testing it. The experiments made here (in Manchester) were at first made on plain square bars, after which different patterns were tried, and this led to the discovery that Tredgold's section was not the strongest by very much." We give these few particulars, as illustrating points referred to in our former article; we may, however, remark, that our correspondent had no intention of questioning the general accuracy of the experiments made at Manchester, which are justly considered of the utmost value.

TOWER BUILDINGS, OLD CHURCHYARD, LIVERPOOL.

THE buildings erected of late years in the town of Liverpool, for commercial purposes, have assumed an architectural character of a description never dreamed of until recently. Suites of merchants' offices and commercial chambers have arisen in many of the principal streets, and some of the bye-ways of the town, combining imposing magnitude of size with considerable architectural pretensions, forming suitable abodes for the commerce of the modern Tyne "whose merchants are princes," and whose traffic extends to the uttermost bounds of the earth. Amongst the most important may be mentioned, the royal Bank buildings in Dale-street, the architect the late Mr. Samuel Rowland; Brunswick buildings, Brunswick-street, by Messrs. A. and G. Williams, a view of which appeared in the *Companion to the Almanac*, a year or two since, and which has been repeated in the *Westminster Review*, just published; and Fenwick chambers, Fenwick-street, by Mr. J. A. Pictou. Castle-street, the principal street of the town, is about to be adorned with a new branch Bank of England, from the designs of Mr. Cockerell, and immediately adjoining, by the buildings of the Commercial Bank, by Mr. J. Cunningham.

The buildings named at the head of this article are the most recent of this class, being only now on the point of commencement; but will, when completed, be the most imposing in point of size of any yet erected.

They are intended to comprehend one entire block, or insula, extending from Water street to the Old Churchyard, about 70 yards from north to south, and from Tower-garden to Stringer's-alley, about 34 yards from east to west. One-half of this design is now being carried up, the remainder being left to a subsequent period. The general arrangement is,

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